



**SAN BERNARDINO COUNTY FIRE DEPARTMENT  
COMMUNITY SAFETY DIVISION**

620 South 'E' Street  
San Bernardino, CA 92415-0179  
(909) 386-8400

Standard Number

**W-2**

Revision Date:  
3-22-16

**FIRE SAFETY STANDARD**

**ONSITE FIRE PROTECTION WATER SYSTEMS**

**AUTHORITY**

Sections 102.9, 103 and 104.1 of the 2013 California Fire Code provides that the fire code official of the San Bernardino County Fire Department shall have the authority to adopt policies, procedures, rules, and regulations in order to clarify the application of the Fire Code and to specify requirements not specifically provided for by the Fire Code. For further requirements on this subject, see section 508 of the 2013 California Fire Code. This standard may be modified with the approval of the Fire Code Official.

**PURPOSE**

The purpose of this standard is to serve as a guideline to NFPA 24 AND 25 for establishing an onsite private water supply capable of providing an adequate water supply for firefighting purposes, as determined by the requirements in the Fire Code.

**SCOPE**

This standard establishes minimum requirements for installation and maintenance of all private fire hydrants and appliances related to an onsite fire protection system.

**DISCLAIMER**

*These standards may change without notice. Whenever applicable statutes, regulations and standards are updated and adopted, the latest shall apply. Please contact the Community Safety Division at (909) 386-8400 to determine if these standards have changed.*

*These requirements do not exempt any individual from complying with other applicable state, county, or city codes and standards.*

**SUBMITTALS**

The following shall be submitted to the Fire Department for approval and permit prior to performing any work on any fire sprinkler system:

- 1) A completed San Bernardino County Fire Department permit application



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- 2) A minimum of three (3) sets of detailed plans describing the work to be done. (For information on what must be included on plans, see sections below in this Standard and the SBCFD Plan Submittal Checklist.) The designer of the system shall provide a certification statement with the following text verbatim: *"I certify that the design of the water system is in accordance with the requirements of the San Bernardino County Fire Department"*.
- 3) Manufacturer's specifications sheets (cut sheets) for all proposed materials and equipment.
- 4) A water flow test report from the water purveyor dated within one (1) year of submittal
- 5) Any other important details and information as required by this Standard.
- 6) Payment of all appropriate fees.
- 7) No work shall commence until plans are approved by the Fire Department and/or the water company having jurisdiction.

**UNDERGROUND PIPING SYSTEMS**

- 1) Commercial/industrial projects with a building(s) exceeding 100,000 square feet shall be required to have a looped fire line system and with a minimum of two (2) points of connection to the public water source.
- 2) Underground pipe shall be laid with the identification data facing up to permit inspection and verification of pipe nomenclature.
- 3) Thrust blocks or restrained joints shall be provided as per the current edition of NFPA 24.
- 4) When plastic mains are installed, they shall be marked with 12 gauge tracer wire, taped to the top of the pipe, or with approved tracer tape installed in the trench according to the manufacturer's instructions.

**FIRE HYDRANT DISTANCES**

- 1) All fire hydrants, public and private, shall be located within one hundred fifty (150) feet from all portions of the building(s) to be protected, as measured along approved fire apparatus access routes.
- 2) In no case shall fire hydrants be closer than twenty-five (25) feet to any building, unless approved by the Fire Code Official.



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- 3) Public fire hydrants installed to support a fire sprinkler system shall not exceed fifty (50) feet from the fire department connection nor be closer than three (3) feet. **See Diagram W-2.1**

**FIRE HYDRANT SPACING**

1) RESIDENTIAL AREAS (SINGLE-FAMILY):

- a) Single-family residential developments may have spacing between hydrants no more than six hundred (600) feet and the hydrant shall not be more than three hundred (300) feet (as measured along vehicular travel-ways) to main driveway on the address side of the proposed single-family structure.
- b) Shorter hydrant spacing may be required by local ordinances and regulations.

2) MULTIPLE FAMILY RESIDENTIAL, INDUSTRIAL AND COMMERCIAL AREAS:

- a) Public fire hydrants shall be installed on public streets at distances no greater than three hundred (300) feet between each appliance.
- b) Public fire hydrants shall be required on both sides of a public street, if the public right-of-way exceeds eighty (80) feet.
- c) Private on-site fire hydrants may be required if any portion of the building(s) to be protected exceeds three hundred fifty (300) from the public fire hydrant as measured along vehicular travel-ways.

**HYDRANT SIZE, INSTALLATION, LOCATION AND TYPE**

- 1) The centerline of the riser shall be normally two (2) feet behind the curb face, unless otherwise approved by the Fire Code Official. **See Diagram W-2.2**
- 2) Where curbs and/or sidewalks exist, the centerline of the bottom outlet must be no lower than eighteen (18) inches and no higher than twenty four (24) inches above the finished grade. In the absence of a curb, set center of bottom outlet no lower than eighteen (18) inches and no higher than twenty four (24) inches above the crown of the road (the crown of the road is the highest point in the middle of the roadway) and provide steel pipe barricades, four (4) inches in diameter filled with concrete, three (3) feet from the hydrant so as not to obstruct the outlets and valve nuts. **See Diagram W-2.2**
- 3) Fire hydrant shut off valves (street valves) shall be located in the drive aisle, directly in front of the 4" port, 3' to 10' from the hydrant, covered with a metal valve box cover painted blue. **See Diagram W-2.3**



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- 4) No fire hydrant shall be installed closer than five (5) feet from the edge of driveway aprons.
- 5) Fire hydrants on cul-de-sac's shall be located between the short portions of 2 driveways and shall not be located at the end of the cul-de-sac. On main line extensions fire hydrants shall not be located at end of line. There shall be a blow off at the end of line, if required by the local water purveyor. **See Diagram W-2.4**
- 6) Wet barrel fire hydrants shall be manufactured to ANSI and AWWA standards. The six (6) inch riser and outlets (two - 2 1/2 inch and one - 4 inch) shall be cast as an integral part of the head. They shall be fastened / locked to the head in such a manner to prevent the unintentional removal of the outlets out of the head.
- 7) Manufacturer's specifications of fire hydrants shall be submitted to the Fire Code Official upon request.
- 8) All hydrants on private property shall be an approved hydrant with breakaway bolts.
- 9) Private dry barrel fire hydrants in areas subject to freezing shall meet the same specifications as local public dry barrel fire hydrants maintained by the local water purveyor. In no case shall a dry barrel hydrant be less than 6" x 4" x 2 1/2" x 2 1/2".
- 10) The exterior of the hydrant head including the riser, excluding the threads, shall be painted with two coats of primer and two coats of exterior oil based safety yellow paint.

**WATER MAIN SIZES**

- 1) Multi-Residential and Commercial-Industrial water main size - shall be determined by the required fire flow.
- 2) Final flow tests shall be made by flowing fire hydrants of all new water distribution systems constructed in accordance with approved water plans. The tests shall be observed by the Fire code official and calculated to establish adequate water is provided prior to final inspection.

**HYDRANT MARKERS**

- 1) The developer/contractor shall install blue reflective markers in accordance with the following specifications:
  - a) Markers shall be Ray-O-Lite 2SRPM-DB or equivalent.
  - b) Adhesive shall be Ray-O-Lite 2SRMESS1 or equivalent.
- 2) Location of pavement markers:



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- a) Markers shall be placed eighteen (18) inches from the painted center line (CL) or if no painted CL exists, eighteen (18) inches from the center of the roadway on the side nearest the hydrant.
  - b) On a four- (4) lane street with turn lane at the intersection, the marker shall be eighteen (18) inches from the edge of the turn lane on the side nearest the hydrant.
  - c) Streets with a median having a hydrant on the roadside, shall have markers placed eighteen (18) inches from the edge of the painted line closest to, and on the side nearest the hydrant.
  - d) Hydrants at an intersection shall have markers placed on both streets.
  - e) Hydrants on a median shall have a marker eighteen (18) inches from the median edge on both sides of the median.
  - f) For multi-lane streets with a center turn lane not at an intersection, the marker shall be eighteen (18) inches from the edge of the turn lane on the side nearest the hydrant.
- 3) In areas subject to regular snow coverage, alternative marking devices may be used with the approval of the Fire Code Official.

**SYSTEM TESTING**

- 1) All underground piping shall be hydrostatically tested in accordance with NFPA 24 and flushed prior to connection to any overhead sprinkler piping.
- 2) It is the underground contractor's responsibility to give proper notification of these tests prior to any piping being concealed.

**SPECIAL CONCERNS**

- 1) Special hazard areas, high-rise buildings and other areas of fire protection not covered in this standard may require special consideration. The contractor is encouraged to contact the Fire Code Official regarding these areas not covered in this standard.



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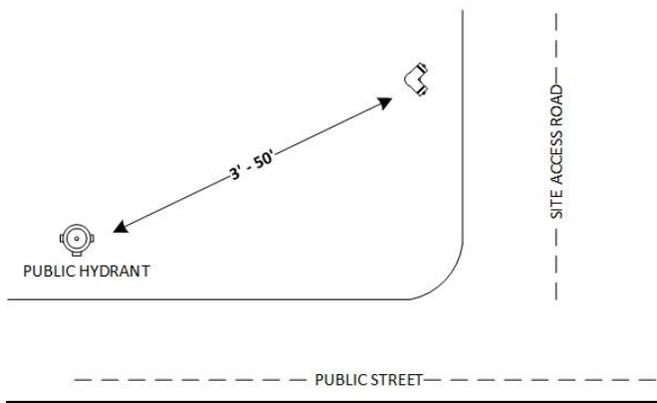
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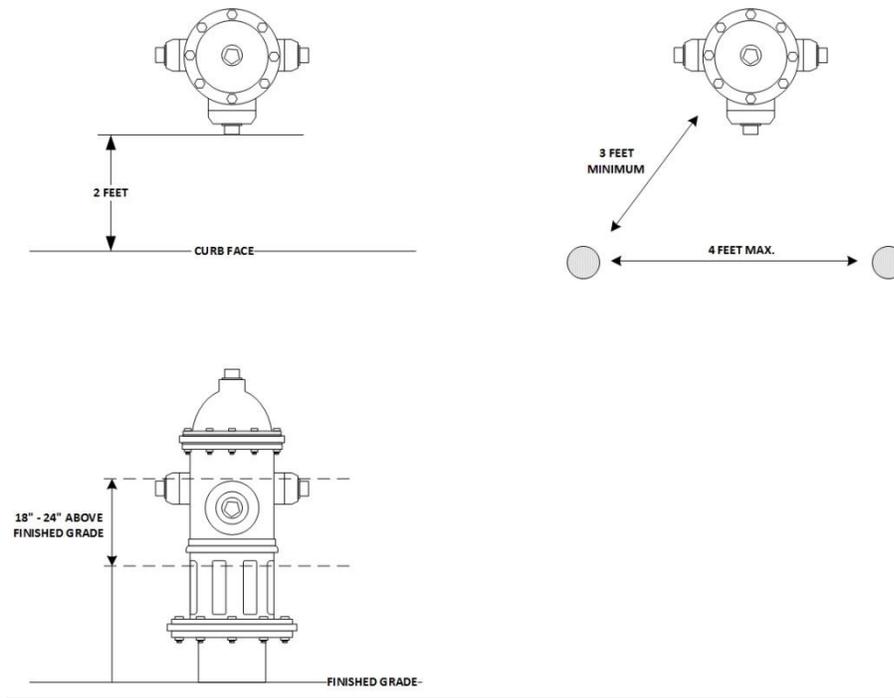
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**DIAGRAM W-2.1: FIRE HYDRANT AND PIV DETAILS**



**DIAGRAM W-2.2: FIRE HYDRANT INSTALLATION DETAILS**





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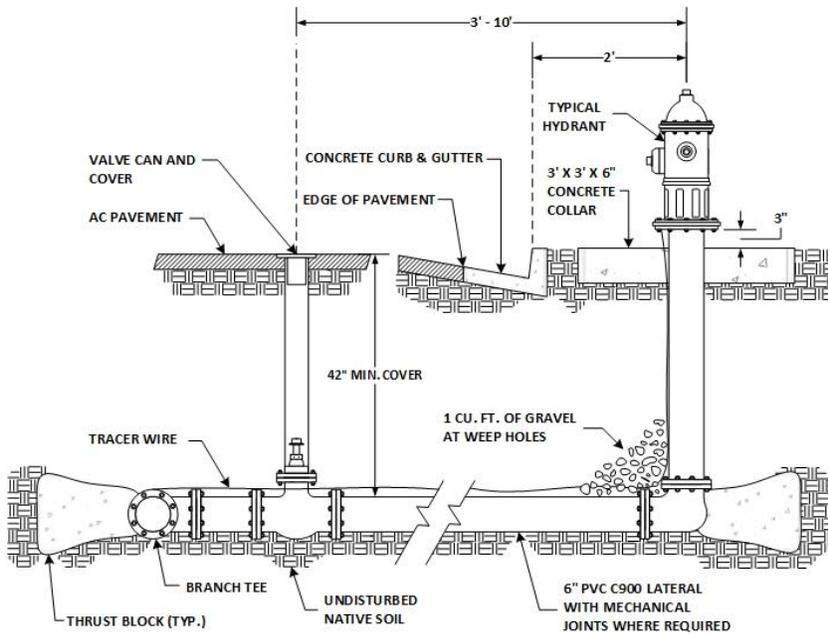
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**DIAGRAM W-2.3: FIRE HYDRANT INSTALLATION DETAILS**



**TYPICAL FIRE HYDRANT DETAIL**

**DIAGRAM W-2.4: FIRE HYDRANT DETAILS**

